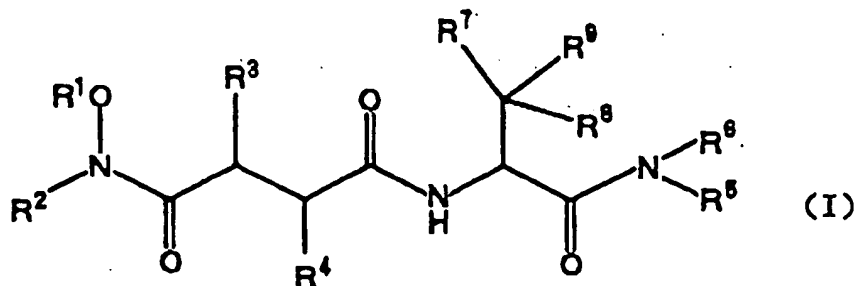


5. (Twice Amended) A metalloproteinase inhibitor which comprises an effective amount of at least a member selected from the group consisting of a compound of the formula (I):

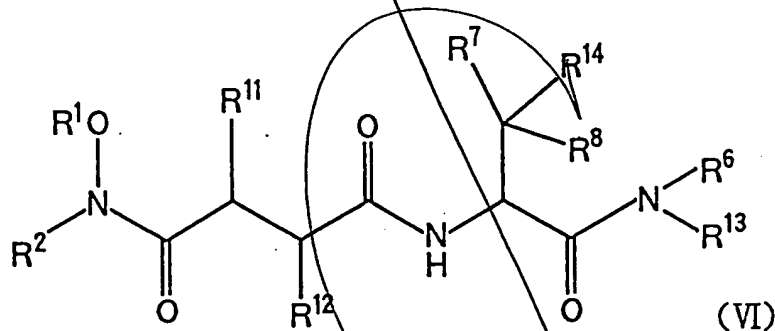


wherein  $R^1$  to  $R^9$ , all have the same meanings as defined in claim 16, and a pharmaceutically acceptable salt or solvate thereof.

B2

8. (Twice Amended) A method of prophylactically and/or therapeutically treating diseases and/or disorders associated with tissue degradation comprising administering an effective amount of the compound according to claim 16.

12. (Twice Amended) A compound having the following formula (VI):



wherein  $R^1$ ,  $R^2$ , and  $R^6$  to  $R^8$ , all have the same meanings as defined in claim 16,

B3  
cont.

$R^{11}$  has the same meaning as defined for  $R^3$ , or is selected from the group consisting of protected hydroxy, protected guanido-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, protected amino-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, nitro-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, protected amino-substituted ( $C_1-C_6$ ) alkyl, nitro-substituted ( $C_1-C_6$ ) alkyl, protected carboxy-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, protected hydroxy-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, protected guanido-substituted lower ( $C_1-C_4$ ) alkyl-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, protected amino-substituted lower ( $C_1-C_4$ ) alkyl-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, protected hydroxy-substituted lower ( $C_1-C_4$ ) alkyl-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, protected carboxy-substituted lower ( $C_1-C_4$ ) alkyl-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, protected hydroxy-containing ( $C_1-C_8$ ) straight chain or branched alkyl, and cyano-substituted phenyl-lower ( $C_1-C_4$ ) alkyl;

$R^{12}$  has the same meaning as defined for  $R^4$ , or is protected hydroxy-substituted ( $C_1-C_8$ ) alkyl;

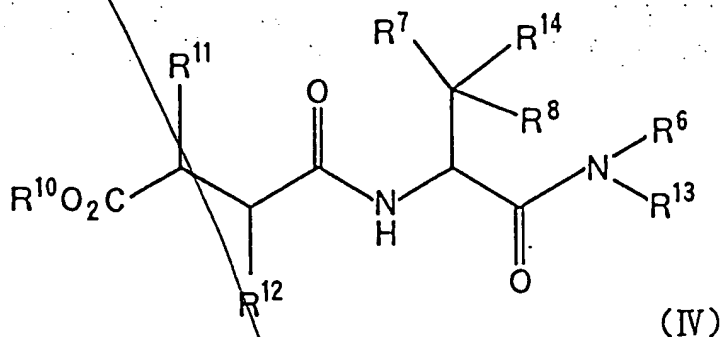
$R^{13}$  has the same meaning as defined for  $R^5$ , or is selected from the group consisting of protected carboxy-substituted lower ( $C_1-C_4$ ) alkyl, protected hydroxy-substituted lower ( $C_1-C_4$ ) alkyl, protected bis(phosphono)hydroxymethyl-substituted ( $C_1-C_{11}$ ) alkyl, and a protected nitrogen-containing heterocyclic group; and

$R^{14}$  has the same meaning as defined for  $R^9$ , or is selected from the group consisting of protected amino, protected hydroxy, and a group of the formula:  $-X-E$  or  $-X-A-E$

wherein X and A, both have the same meanings as given above, and E is selected from the group consisting of nitro, cyano, amino, carboxyl, ( $C_1-C_{11}$ ) hydroxyalkyl, protected amino, protected guanido, protected amidino, protected acylimido, protected benzimidoyl, protected bis(phosphono)methyl, protected bis(phosphono)hydroxymethyl, and protected ( $C_1-C_{11}$ ) alkyl-substituted imidazol-3-yl;

or a salt thereof.

13. (Twice Amended) A compound having the following formula (IV):



wherein  $R^6$  to  $R^8$ , all have the same meanings as defined in claim 16,

$R^{10}$  is selected from the group consisting of unsubstituted or optionally substituted alkyl, unsubstituted or optionally substituted aralkyl, and a carboxy-protecting group;

$R^{11}$  has the same meaning as defined for  $R^3$ , or is selected from the group consisting of protected hydroxy, protected guanido-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, protected amino-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, nitro-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, protected amino-substituted ( $C_1-C_6$ ) alkyl, nitro-substituted ( $C_1-C_6$ ) alkyl, protected carboxy-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, protected hydroxy-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, protected guanido-substituted lower ( $C_1-C_4$ ) alkyl-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, protected amino-substituted lower ( $C_1-C_4$ ) alkyl-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, protected hydroxy-substituted lower ( $C_1-C_4$ ) alkyl-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, protected carboxy-substituted lower ( $C_1-C_4$ ) alkyl-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, protected hydroxy-containing ( $C_1-C_8$ ) straight chain or branched alkyl, and cyano-substituted phenyl-lower ( $C_1-C_4$ ) alkyl;

$R^{12}$  has the same meaning as defined for  $R^4$ , or is protected hydroxy-substituted ( $C_1-C_8$ ) alkyl;

bis(phosphono)methyl, protected bis(phosphono)hydroxymethyl,  
and protected ( $C_1-C_{11}$ ) alkyl-substituted imidazol-3-yl;

*B3*  
*COO4,*  
 $R^{13}$  has the same meaning as defined for  $R^5$ , or is selected from the group consisting of protected carboxy-substituted lower ( $C_1-C_4$ ) alkyl, protected hydroxy-substituted lower ( $C_1-C_4$ ) alkyl, protected bis(phosphono)hydroxymethyl-substituted ( $C_1-C_{11}$ ) alkyl, and a protected nitrogen-containing heterocyclic group; and

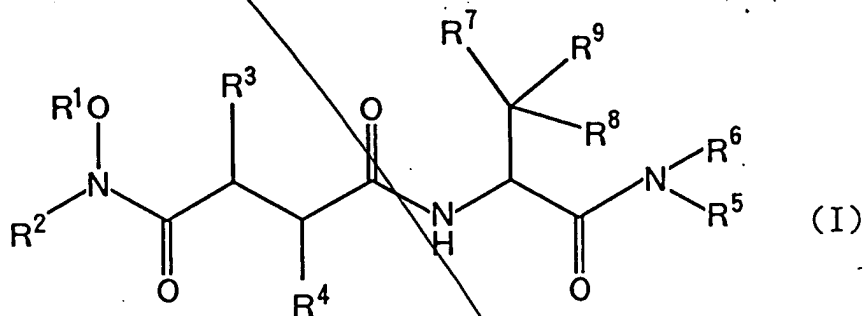
$R^{14}$  has the same meaning as defined for  $R^9$ , or is selected from the group consisting of protected amino, protected hydroxy, and a group of the formula:  $-X-E$  or  $-X-A-E$

wherein X and A, both have the same meanings as given above, and E is selected from the group consisting of nitro, cyano, amino, carboxyl, ( $C_1-C_{11}$ ) hydroxyalkyl, protected amino, protected guanido, protected amidino, protected acylimido, protected benzimidoyl, protected

or a salt thereof.

Please add the following new claims:

16. A compound having the following formula (I):



wherein  $R^1$ ,  $R^2$ ,  $R^6$ ,  $R^7$  and  $R^8$  are each hydrogen,

1)  $R^3$  is  $(C_1-C_9)$  alkyl,

$R^4$  is  $(C_3-C_9)$  alkyl,

$R^5$  is  $(C_1-C_4)$  alkyl,

$R^9$  is  $-X-Y$ , and  $Y$  is  $-A-B$  or  $-B$ ,

wherein  $X$ ,  $Y$ ,  $A$  and  $B$  are selected from the following combinations:

①  $X$  is  $(C_1-C_6)$  alkylene,  $Y$  is  $-A-B$ ,  $A$  is imino and  $B$  is amidino;

②  $X$  is  $(C_1-C_6)$  alkylene,  $Y$  is  $-B$  and  $B$  is amino;

③  $X$  is phenylene,  $Y$  is  $-A-B$ ,  $A$  is lower  $(C_1-C_4)$  alkylene-imino and  $B$  is lower  $(C_1-C_4)$  acylimidoyl;

④  $X$  is  $(C_1-C_6)$  alkylene,  $Y$  is  $-A-B$ ,  $A$  is imino and  $B$  is selected from the group consisting of lower  $(C_1-C_4)$  acylimidoyl and benzimidoyl;

⑤  $X$  is phenylene,  $Y$  is  $-A-B$ ,  $A$  is lower  $(C_1-C_4)$  alkyl and  $B$  is amino; and

⑥  $X$  is phenylene,  $Y$  is  $-A-B$ ,  $A$  is imino and  $B$  is selected from the group consisting of tetra-lower  $(C_1-C_4)$  alkyl bis(phosphono)methyl and tri-lower  $(C_1-C_4)$  alkyl

bis(phosphono)methyl;

- 2)  $R^3$  is  $(C_1-C_9)$  alkyl,  
 $R^4$  is  $(C_3-C_9)$  alkyl,  
 $R^5$  is hydroxy-substituted  $(C_1-C_6)$  alkyl or a nitrogen-containing heterocyclic radical,  
 $R^9$  is  $-X-Y$ , and  $Y$  is  $-A-B$ ,  
wherein  $X$  is  $(C_1-C_6)$  alkylene,  
 $A$  is imino and  
 $B$  is lower  $(C_1-C_4)$  acylimidoyl;

- 3)  $R^3$  is  $(C_1-C_9)$  alkyl,  
 $R^4$  is  $(C_3-C_9)$  alkyl,  
①  $R^5$  is  $(C_3-C_7)$  cycloalkyl,  
 $R^9$  is  $-X-Y$ , and  $Y$  is  $-B$ ,  
wherein  $X$  is  $(C_1-C_6)$  alkylene and  
 $B$  is amino; or  
②  $R^5$  is a nitrogen-containing heterocyclic radical,  
 $R^9$  is  $-X-Y$ , and  $Y$  is  $-A-B$ ,  
wherein  $X$  is phenylene,  
 $A$  is lower  $(C_1-C_4)$  alkylene-imino and  
 $B$  is lower  $(C_1-C_4)$  acylimidoyl;

- 4)  $R^3$  is  $(C_1-C_9)$  alkyl,  
 $R^4$  is  $(C_3-C_9)$  alkyl,  
 $R^5$  is carboxy-substituted lower  $(C_1-C_4)$  alkyl, di-lower  $(C_1-C_4)$  alkylamino-substituted lower  $(C_1-C_4)$  alkyl or hydroxy-substituted  $(C_1-C_6)$  alkyl, and  
 $R^9$  is  $-X-Y$ ,  
wherein  $X$  is phenylene and

Y is -A-B,

wherein A and B are selected from the following combinations:

- ① A is lower ( $C_1-C_4$ ) alkylene-imino and  
B is lower ( $C_1-C_4$ ) acylimido; and  
② A is lower ( $C_1-C_4$ ) alkylene and  
B is amino;

5)  $R^3$  is ( $C_1-C_9$ ) alkyl,

$R^4$  is ( $C_3-C_9$ ) alkyl,

① when  $R^5$  is hydroxy-substituted ( $C_1-C_6$ ) alkyl,

$R^9$  is -X-Y,

wherein X is phenylene and

Y is -A-B,

wherein

A is lower ( $C_1-C_4$ ) alkylene-imino and

B is lower ( $C_1-C_4$ ) acylimido; or

② when  $R^5$  is lower ( $C_1-C_4$ ) alkyl,

$R^9$  is -X-Y,

wherein X is ( $C_1-C_6$ ) alkylene and

Y is -A-B,

wherein A is imino and

B is amidino;

6)  $R^3$  is phenyl-lower ( $C_1-C_4$ ) alkyl,

$R^4$  is ( $C_3-C_9$ ) alkyl,

①  $R^5$  is lower ( $C_1-C_4$ ) alkyl,

$R^9$  is -X-Y, and Y is -A-B,

wherein X is phenylene and

A is lower ( $C_1-C_4$ ) alkylene and

B is amino; or

②  $R^5$  is di-lower ( $C_1-C_4$ ) alkylamino-substituted lower ( $C_1-C_4$ ) alkyl, hydroxy-substituted ( $C_1-C_6$ ) alkyl or lower ( $C_1-C_4$ ) alkyl,

$R^9$  is -X-Y, and Y is -A-B,

wherein X is ( $C_1-C_6$ ) alkylene and

A is imino and

B is lower ( $C_1-C_4$ ) acylimidoyl;

7)  $R^3$  is nitrogen-containing heterocyclic radical-substituted lower ( $C_1-C_4$ ) alkyl, carboxy-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, amino-substituted lower ( $C_1-C_4$ ) alkyl-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, hydroxy-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, lower ( $C_1-C_4$ ) alkoxy-carbonyl-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, oxygen-containing ( $C_1-C_6$ ) straight chain or branched alkyl, or hydroxy-substituted ( $C_1-C_8$ ) alkyl;

$R^4$  is ( $C_3-C_9$ ) alkyl,

$R^5$  is lower ( $C_1-C_4$ ) alkyl,

$R^9$  is -X-Y, and Y is -B,

wherein X is trimethylene and

B is amino;

8) ①  $R^3$  is ( $C_1-C_9$ ) alkyl, and

$R^4$  is hydroxy-substituted ( $C_3-C_8$ ) alkyl, or

②  $R^3$  is nitrogen-containing heterocyclic radical-substituted lower ( $C_1-C_4$ ) alkyl, and

$R^4$  is ( $C_3-C_9$ ) alkyl,

$R^5$  is lower ( $C_1-C_4$ ) alkyl,

$R^9$  is -X-Y, and Y is -B,

wherein X is ( $C_1-C_6$ ) alkylene and

B is amino;



9)  $R^3$  is amino-substituted lower ( $C_1-C_4$ ) alkyl-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, lower ( $C_1-C_4$ ) acylimido-ylimino-substituted ( $C_1-C_6$ ) alkyl, lower ( $C_1-C_4$ ) alkylimino-substituted ( $C_1-C_6$ ) alkyl, nitrogen-containing heterocyclic radical-substituted lower ( $C_1-C_4$ ) alkylimino-substituted ( $C_1-C_6$ ) alkyl, or isopropyliminomethylbenzyl,

$R^4$  is ( $C_3-C_9$ ) alkyl,

$R^5$  is lower ( $C_1-C_4$ ) alkyl,

$R^9$  is hydrogen;

10)  $R^3$  is aryloxy-substituted lower ( $C_1-C_4$ ) alkyl, ( $C_3-C_7$ ) cycloalkyl-substituted lower ( $C_1-C_4$ ) alkyl, arylsulfonamido-substituted lower ( $C_1-C_4$ ) alkyl-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, alkylsulfonamido-substituted lower ( $C_1-C_4$ ) alkyl-substituted phenyl-lower ( $C_1-C_4$ ) alkyl, or amino-substituted lower ( $C_1-C_4$ ) alkyl-substituted phenyl-lower ( $C_1-C_4$ ) alkyl,

$R^4$  is ( $C_3-C_9$ ) alkyl,

$R^5$  is lower ( $C_1-C_4$ ) alkyl,

$R^9$  is -X-Y, and Y is -A-B,

wherein X is ( $C_1-C_6$ ) alkylene,

A is imino and

B is amidino;

11)  $R^3$  is phenyl-lower ( $C_1-C_4$ ) alkyl,

$R^5$  is lower ( $C_1-C_4$ ) alkyl,

(i) when  $R^4$  is ( $C_3-C_9$ ) alkyl,

$R^9$  is -X-Y, and Y is -A-B,

wherein X is (C<sub>1</sub>-C<sub>6</sub>) alkylene,  
A is imino and  
B is amidino;

② when R<sup>4</sup> is aryl-lower (C<sub>1</sub>-C<sub>4</sub>) alkyl,  
R<sup>9</sup> is -X-Y, and Y is -A-B,  
wherein X is (C<sub>1</sub>-C<sub>6</sub>) alkylene,  
A is imino and  
B is amidino; or

③ when R<sup>4</sup> is (C<sub>3</sub>-C<sub>9</sub>) alkyl,  
R<sup>9</sup> is -X-Y, and Y is -B,  
wherein X is (C<sub>1</sub>-C<sub>6</sub>) alkylene, and  
B is amino;

12) R<sup>3</sup> is amino-substituted lower (C<sub>1</sub>-C<sub>4</sub>) alkyl-substituted  
phenyl-lower (C<sub>1</sub>-C<sub>4</sub>) alkyl,

R<sup>4</sup> is (C<sub>3</sub>-C<sub>9</sub>) alkyl,

R<sup>5</sup> is lower (C<sub>1</sub>-C<sub>4</sub>) alkyl,

R<sup>9</sup> is -X-Y, and Y is -B,

wherein X is (C<sub>1</sub>-C<sub>6</sub>) alkylene, and  
B is amino;

13) R<sup>3</sup> is amino-substituted phenyl-lower (C<sub>1</sub>-C<sub>4</sub>) alkyl,

R<sup>4</sup> is (C<sub>3</sub>-C<sub>9</sub>) alkyl,

R<sup>5</sup> is di-lower (C<sub>1</sub>-C<sub>4</sub>) alkylamino-substituted lower  
(C<sub>1</sub>-C<sub>4</sub>) alkyl,

R<sup>9</sup> is -X-Y, and Y is -A-B,

wherein X is (C<sub>1</sub>-C<sub>6</sub>) alkylene, and  
A is imino and

B is lower (C<sub>1</sub>-C<sub>4</sub>) acylimidoyl;

14)  $R^3$  is guanido-substituted phenyl-lower ( $C_1-C_4$ ) alkyl,  
guanido-substituted lower ( $C_1-C_4$ ) alkyl-substituted  
phenyl-lower ( $C_1-C_4$ ) alkyl, or amino-substituted lower  
( $C_1-C_4$ ) alkyl-substituted phenyl-lower ( $C_1-C_4$ ) alkyl,

$R^4$  is ( $C_3-C_9$ ) alkyl,

$R^5$  is lower ( $C_1-C_4$ ) alkyl,

$R^9$  is -X-Y, and Y is -B,

wherein X is ( $C_1-C_6$ ) alkylene, and

B is amino; or

15)  $R^3$  is amino-substituted lower ( $C_1-C_4$ ) alkyl-substituted  
phenyl-lower ( $C_1-C_4$ ) alkyl,

$R^4$  is ( $C_3-C_9$ ) alkyl,

$R^5$  is lower ( $C_1-C_4$ ) alkyl,

$R^9$  is -X-Y, and Y is -A-B,

wherein X is phenylene,

A is lower ( $C_1-C_4$ ) alkylene, and

B is amino;

or a pharmaceutically acceptable salt or solvate thereof.

17. The compound according to claim 16 wherein

$R^1$ ,  $R^2$ ,  $R^6$ ,  $R^7$  and  $R^8$  are each hydrogen,

1)  $R^3$  is methyl,

$R^4$  is isobutyl,

$R^5$  is methyl,

$R^9$  is -X-Y and Y is -A-B or -B

wherein X, Y, A and B are selected from the following combinations:

- ① X is methylene or ethylene, Y is -A-B, A is imino and B is amidino;
- ② X is ethylene or trimethylene, Y is -B and B is amino;
- ③ X is phenylene, Y is -A-B, A is methyleneimino and B is acetimidoyl;
- ④ X is trimethylene, Y is -A-B, A is imino and B is selected from the group consisting of acetimidoyl, propionimidoyl and benzimidoyl;
- ⑤ X is phenylene, Y is -A-B, A is methylene and B is amino; and
- ⑥ X is phenylene, Y is -A-B, A is imino and B is selected from the group consisting of tetra-ethyl bis(phosphono)methyl, tetra-methyl bis(phosphono)methyl, tri-ethyl bis(phosphono)methyl and tri-methyl bis(phosphono)methyl;

2)  $R^3$  is methyl,

$R^4$  is isobutyl,

$R^5$  is 2-hydroxy-1-methylethyl or piperidyl,

$R^9$  is -X-Y, and Y is -A-B,

wherein X is trimethylene,

A is imino and

B is acetimidoyl;

3)  $R^3$  is methyl,

$R^4$  is isobutyl,

①  $R^5$  is cyclopropyl,

$R^9$  is -X-Y, and Y is -B,  
wherein X is ethylene and  
B is amino;

②  $R^5$  is morpholino,

$R^9$  is -X-Y, and Y is -A-B,  
wherein X is phenylene,  
A is methyleneimino and  
B is acetimidoyl;

$R^3$  and  $R^4$  are each isobutyl,

$R^5$  is 2-carboxyethyl, 2-dimethylaminoethyl or  
2-hydroxyethyl,

$R^9$  is -X-Y,

wherein X is phenylene and  
Y is -A-B,

wherein A and B are selected from the following  
combinations:

① A is methyleneimino and  
B is acetimidoyl; and

② A is methylene and  
B is amino;

5)  $R^3$  and  $R^4$  are each isobutyl,

① when  $R^5$  is 2-hydroxy-1,1-dimethylethyl,

$R^9$  is -X-Y,

wherein X is phenylene and

Y is -A-B,

wherein A is methyleneimino and  
B is acetimidoyl;

② when R<sup>5</sup> is methyl,

R<sup>9</sup> is -X-Y,

wherein X is methylene or ethylene and

Y is -A-B,

wherein A is imino and

B is amidino;

6) R<sup>3</sup> is phenylpropyl,

R<sup>4</sup> is isobutyl,

① R<sup>5</sup> is methyl,

R<sup>9</sup> is -X-Y, and Y is -A-B,

wherein X is phenylene and

A is methylene and

B is amino; or

② R<sup>5</sup> is 2-dimethylaminoethyl, 2-hydroxyethyl or methyl,

R<sup>9</sup> is -X-Y, and Y is -A-B,

wherein X is trimethylene,

A is imino and

B is acetimidoyl;

7) R<sup>3</sup> is morpholinopropyl, carboxyphenylpropyl,  
aminomethylphenylpropyl, hydroxyphenylpropyl,  
methoxycarbonylphenylpropyl, piperidinylpropyl,  
iso-butyloxyethyl, butoxyethyl, ethoxyethoxyethyl or  
hydroxyoctyl,

R<sup>4</sup> is isobutyl,

R<sup>5</sup> is methyl,

R<sup>9</sup> is -X-Y, and Y is -B,

wherein X is trimethylene and

B is amino;

- 8) ①  $R^3$  is isobutyl, and  
 $R^4$  is hydroxyoctyl, or  
②  $R^3$  is (3,4,4-trimethyl-2,5-dioxo-imidazolidin-1-yl)-  
propyl, and  
 $R^4$  is isopropyl,  
 $R^5$  is methyl,  
 $R^9$  is -X-Y, and Y is -B,  
wherein X is trimethylene and  
B is amino;

- 9)  $R^3$  is aminomethylphenylpropyl, aminomethylbenzyl,  
acetimidoyliminopentyl, isopropyliminopentyl,  
(pyridin-4-ylmethylimino)pentyl or  
isopropyliminomethylbenzyl,  
 $R^4$  is isobutyl,  
 $R^5$  is methyl, and  
 $R^9$  is hydrogen;

- 10)  $R^3$  is phenoxyethyl, cyclohexylpropyl, toluenesulfonamido-  
methylbenzyl, methanesulfonamidomethylbenzyl or  
phthalimidomethylbenzyl,  
 $R^4$  is isobutyl,  
 $R^5$  is methyl, and  
 $R^9$  is -X-Y, and Y is -A-B,  
wherein X is ethylene,  
A is imino and  
B is amidino;

- 11)  $R^3$  is phenylpropyl,  
 $R^5$  is methyl,  
① when  $R^4$  is isobutyl,  
 $R^9$  is -X-Y, and Y is -A-B,  
wherein X is methylene,  
A is imino and  
B is amidino;

5UB  
C1  
COO4.

② when R<sup>4</sup> is naphthylmethyl,  
R<sup>9</sup> is -X-Y, and Y is -A-B,  
wherein X is ethylene,  
A is imino and  
B is amidino; or

③ when R<sup>4</sup> is isopropyl,  
R<sup>9</sup> is -X-Y, and Y is -B,  
wherein X is trimethylene, and  
B is amino;

12) R<sup>3</sup> is aminomethylphenylpropyl,

B4  
COO4.

① R<sup>4</sup> is isobutyl,  
R<sup>5</sup> is methyl,  
R<sup>9</sup> is -X-Y, and Y is -B,  
wherein X is methylene or ethylene, and  
B is amino;

② R<sup>4</sup> is isopropyl,  
R<sup>5</sup> is methyl,  
R<sup>9</sup> is -X-Y, and Y is -B,  
wherein X is ethylene, and  
B is amino;

13) R<sup>3</sup> is aminophenylpropyl,  
R<sup>4</sup> is isobutyl,  
R<sup>5</sup> is dimethylaminoethyl,  
R<sup>9</sup> is -X-Y, and Y is -A-B,  
wherein X is trimethylene, and  
A is imino and  
B is acetimidoyl;



14)  $R^3$  is guanidinophenylpropyl, guanidomethylphenylpropyl or aminomethylbenzyl,

$R^4$  is isobutyl,

$R^5$  is methyl, and

$R^9$  is -X-Y, and Y is -B,

wherein X is ethylene, and

B is amino; or

15)  $R^3$  is aminomethylbenzyl,

$R^4$  is isobutyl,

$R^5$  is methyl, and

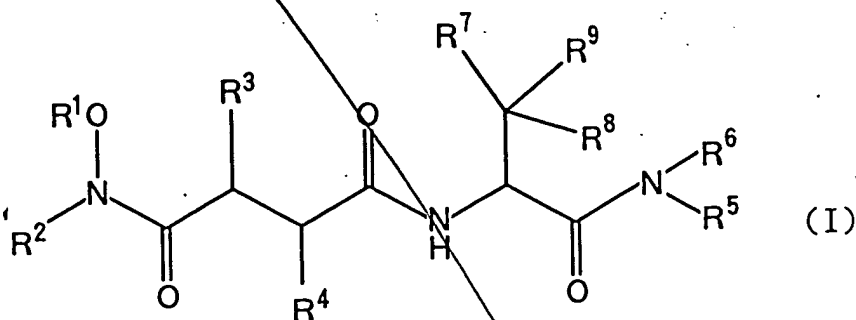
$R^9$  is -X-Y, and Y is -A-B,

wherein X is phenylene,

A is methylene, and

B is amino.

18. A compound having the following formula (I):



wherein  $R^1$ ,  $R^2$ ,  $R^6$ ,  $R^7$  and  $R^8$  are each hydrogen,

- 1)  $R^3$  is methyl,  
 $R^4$  is isobutyl,  
 $R^5$  is methyl,  
 $R^9$  is -X-Y, and Y is -A-B or -B,

wherein X, Y, A and B are selected from the following combinations:

- BY  
COND.
- ① X is  $(C_1-C_6)$  alkylene, Y is -A-B, A is imino and B is amidino;
  - ② X is  $(C_1-C_6)$  alkylene, Y is -B and B is amino;
  - ③ X is phenylene, Y is -A-B, A is methyleneimino and B is acetimidoyl;
  - ④ X is trimethylene, Y is -A-B, A is imino and B is selected from the group consisting of lower  $(C_1-C_4)$  acylimidoyl and benzimidoyl;
  - ⑤ X is phenylene, Y is -A-B, A is methylene and B is amino; and
  - ⑥ X is phenylene, Y is -A-B, A is imino and B is selected from the group consisting of tetra-lower  $(C_1-C_4)$  alkyl bis(phosphono)methyl and tri-lower  $(C_1-C_4)$  alkyl bis(phosphono)methyl;

- 2)  $R^3$  is methyl,  
 $R^4$  is isobutyl,  
 $R^5$  is 2-hydroxy-1-methylethyl or piperidyl,  
 $R^9$  is -X-Y, and Y is -A-B,

wherein X is trimethylene,

A is imino and

B is acetimidoyl;

- 3)  $R^3$  is methyl,

$R^4$  is isobutyl,

①  $R^5$  is cyclopropyl,

$R^9$  is -X-Y, and Y is -B,

wherein X is ethylene and

B is amino;

②  $R^5$  is morpholino,

$R^9$  is -X-Y, and Y is -A-B,

wherein X is phenylene,

A is methyleneimino and

B is acetimidoyl;

- 4)  $R^3$  and  $R^4$  are each isobutyl,

$R^5$  is 2-carboxyethyl, 2-dimethylaminoethyl or  
2-hydroxyethyl,

$R^9$  is -X-Y,

wherein X is phenylene and

Y is -A-B,

wherein A and B are selected from the following  
combinations:

① A is methyleneimino and

B is acetimidoyl; and

② A is methylene and

B is amino;

5)  $R^3$  and  $R^4$  are each isobutyl,

① when  $R^5$  is 2-hydroxy-1,1-dimethylethyl,

$R^9$  is -X-Y,

wherein X is phenylene and

Y is -A-B,

wherein A is methyleneimino and

B is acetimidoyl;

SUB  
C1  
COND  
② when  $R^5$  is methyl,

$R^9$  is -X-Y,

wherein X is  $(C_1-C_6)$  alkylene and

Y is -A-B,

wherein A is imino and

B is amidino;

6)  $R^3$  is phenylpropyl,

$R^4$  is isobutyl,

BY  
COND  
①  $R^5$  is methyl,

$R^9$  is -X-Y, and Y is -A-B,

wherein X is phenylene and

A is methylene and

B is amino; or

②  $R^5$  is 2-dimethylaminoethyl, 2-hydroxyethyl or methyl,

$R^9$  is -X-Y, and Y is -A-B,

wherein X is trimethylene,

A is imino and

B is acetimidoyl;

7)  $R^3$  is nitrogen-containing heterocyclic radical-substituted propyl, carboxyphenylpropyl, aminomethylphenylpropyl, hydroxyphenylpropyl, methoxycarbonylphenylpropyl, oxygen-containing  $(C_1-C_6)$  straight chain or branched alkyl or hydroxyoctyl,

$R^4$  is isobutyl,

$R^5$  is methyl,

$R^9$  is -X-Y, and Y is -B,

wherein X is trimethylene and  
B is amino;

- 8) ①  $R^3$  is isobutyl, and  
 $R^4$  is hydroxyoctyl, or  
②  $R^3$  is (3,4,4-trimethyl-2,5-dioxo-imidazolidin-1-yl)-  
propyl, and  
 $R^4$  is isopropyl,  
 $R^5$  is methyl,  
 $R^9$  is -X-Y, and Y is -B,  
wherein X is trimethylene and  
B is amino;

- 9)  $R^3$  is amino-substituted methyl-substituted phenyl-lower  
( $C_1-C_4$ ) alkyl, acetimidoyliminopentyl,  
isopropyliminopentyl, (pyridin-4-ylmethylimino)pentyl  
or isopropyliminomethylbenzyl,  
 $R^4$  is isobutyl,  
 $R^5$  is methyl, and  
 $R^9$  is hydrogen;

- 10)  $R^3$  is phenoxyethyl, cyclohexylpropyl, toluenesulfonamido-  
methylbenzyl, methanesulfonamidomethylbenzyl or  
phthalimidomethylbenzyl,  
 $R^4$  is isobutyl,  
 $R^5$  is methyl, and  
 $R^9$  is -X-Y, and Y is -A-B,  
wherein X is ethylene,  
A is imino and  
B is amidino;

11)  $R^3$  is phenylpropyl,

$R^5$  is methyl,

① when  $R^4$  is isobutyl,

$R^9$  is -X-Y, and Y is -A-B,

wherein X is methylene,

A is imino and

B is amidino;

② when  $R^4$  is naphthylmethyl,

$R^9$  is -X-Y, and Y is -A-B,

wherein X is ethylene,

A is imino and

B is amidino; or

③ when  $R^4$  is isopropyl,

$R^9$  is -X-Y, and Y is -B,

wherein X is trimethylene, and

B is amino;

12)  $R^3$  is aminomethylphenylpropyl,

$R^4$  is ( $C_3-C_9$ ) alkyl,

$R^5$  is methyl,

$R^9$  is -X-Y, and Y is -B,

wherein X is ( $C_1-C_6$ ) alkylene, and

B is amino;

13)  $R^3$  is aminophenylpropyl,

$R^4$  is isobutyl,

$R^5$  is dimethylaminoethyl,

$R^9$  is -X-Y, and Y is -A-B,

wherein X is trimethylene, and

A is imino and

B is acetimidoyl;

- 14)  $R^3$  is guanidinophenylpropyl, guanidomethylphenylpropyl  
or aminomethylbenzyl,  
 $R^4$  is isobutyl,  
 $R^5$  is methyl, and  
 $R^9$  is -X-Y, and Y is -B,  
wherein X is ethylene, and  
B is amino; or
- 15)  $R^3$  is aminomethylbenzyl,  
 $R^4$  is isobutyl,  
 $R^5$  is methyl, and  
 $R^9$  is -X-Y, and Y is -A-B,  
wherein X is phenylene,  
A is methylene, and  
B is amino;

or a pharmaceutically acceptable salt or solvate thereof.